



Draft for Review

November __, 2015

Reference No. 038443-62

Mr. Timothy D. Hoffman
Dinsmore & Shohl
Fifth Third Center
1 S. Main St. Suite 1300
Dayton, Ohio
45402

Mr. Brian Clark – Tenant
NexGen Vending
2003 Dryden Road
Moraine, Ohio
45439

Dear Messrs. Hoffman and Clark:

**Re: Summary of Vapor Intrusion Sampling Results
NexGen Vending – Building 14
South Dayton Dump and Landfill Site, Moraine, Ohio**

GHD (formerly Conestoga-Rovers & Associates [CRA]) prepared this letter to inform you of the results of the vapor intrusion (VI) sampling completed at your property from 2012 to 2015. Sub-slab (SS, space under your building floor) and indoor air (IA) samples were collected in 2012 as part of the VI investigation at the South Dayton Dump and Landfill (SDDL) Site, and from 2013 to 2015 to evaluate the performance of the installed sub-slab depressurization system (SSDS). The sample locations within NexGen Vending (designated as Building 14) are presented on Figure 1. GHD is conducting this work on behalf of the companies that have responded to United States Environmental Protection Agency (USEPA) requests for Site investigation and VI studies (Respondents). Oversight is being performed by USEPA.

VI is the migration of volatile chemicals from the subsurface into overlying buildings. VI is a potential concern at any building, existing or planned, located near soil, groundwater, or soil vapor containing solvent- or petroleum-related compounds that may volatilize or chemicals that are combustible.

GHD collected SS and IA samples to determine if solvent- or petroleum-based compounds are present in soil vapor beneath the foundation and in IA within the buildings at levels which exceed SS and/or IA screening levels, as established by the Ohio Department of Health (ODH) in 2012.

The ODH has recommended the screening levels for SS and IA samples. The 2012 screening levels represent concentrations of substances that are unlikely to cause harmful (adverse) health effects in exposed people, based on residential exposure. Detections in IA below these levels are not a health concern. The SS screening levels are calculated based on an attenuation factor (AF) to account for the mixing and ventilation that occurs when vapors enter the indoor air space¹. In November 2015,

¹ The 2012 ODH Screening levels were calculated based on an AF of 10, reflective of 2002 USEPA guidance. USEPA revised and issued final VI guidance in 2015 which utilizes an AF of 33 for residential buildings; see

USEPA proposed to supplement the ODH screening levels for the industrial buildings with SSDs at the Site with SS values based on an AF of 33, to reflect current VI guidance for residential buildings (screening levels calculated based on an AF of 33 are referred to as ODH SS screening levels (AF=33)). GHD collected and submitted samples to TestAmerica Inc. GHD received and validated the results of the laboratory analysis. A copy of the validated analytical results compared to the ODH screening levels (AF=10) can be found in Table 1.

Compounds detected at concentrations greater than the ODH SS screening levels (AF=10;AF=33) and ODH IA screening levels from SS and IA samples are presented below. All of the samples are reported in units of parts per billion by volume (ppbv). Figure 1 presents the history of exceedances at Building 14 sample locations.

Table A Summary of Building 14 Sampling Results for NexGen Vending

Location	Sample Type	Sampling Date	Parameter	Detected Concentration (ppbv)	ODH IA Screening Level (AF=10) (ppbv)	ODH SS Screening Levels (AF = 10; AF=33) (ppbv)
<i>Building 14</i>						
SS-14-A	Sub-slab	01/06/2012	1,1-Dichloroethane	500 / 320	Not Applicable	160; 528
		03/28/2012		970		
		08/02/2012		4,100		
		01/16/2014		270 J / 160 J		
		06/03/2014		720 / 650		
		02/19/2015		173		
SS-14-A	Sub-Slab	08/02/2012	Benzene	50	Not Applicable	20; 66
SS-14-A	Sub-Slab	08/02/2012	Trichloroethene (TCE)	36 J	Not Applicable	20; 66
		06/03/2014		27 / 30		
SS-14-A	Sub-Slab	01/06/2012	Vinyl chloride	84 / 70	Not Applicable	20; 66
		03/28/2012		820 J		
		08/02/2012		5,500		
SS-14-C	Sub-Slab	03/27/2012	TCE	27	Not Applicable	20; 66
IA-14-A	Indoor Air	08/02/2012	Benzene	2.4	2	Not Applicable
		01/16/2014		3.2		
IA-14-B	Indoor Air	08/02/2012	Benzene	2.1	2	Not Applicable
		01/16/2014		2.1		

"OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Source to Indoor Air (USEPA, June 2015) (Final Vapor Intrusion Guidance)".

Notes:

Value / Value – Result / Duplicate Result
 J – Estimated concentration

GHD completed measurements at each sub-slab soil vapor probe location to check if the SSDS is depressurizing the building sub-slab. A vacuum reading of negative 0.004 inches of water column ("w.c.) indicates that the SSDS is successfully depressurizing the building sub-slab. The latest vacuum readings are presented in Table B below.

Table B Summary of Building 14 NexGen Vending Vacuum Readings

Location	Vacuum (" w.c.)	Target Vacuum (" w.c.)
SS-14-A	-0.490	-0.004
SS-14-B	-0.0456	
SS-14-C	-0.01274	
SS-14-E	-0.00136	

What do these results mean?

The 2012 TCE SS sample and IA results were greater than the ODH screening levels. These results showed that at the time of each sampling event in 2012, VI was occurring in Building 14.

In 2012, benzene was the only parameter detected in Building 14 indoor air at concentrations greater than the ODH IA screening levels. Benzene was detected at a concentration greater than the ODH IA screening level only once following the installation of the SSDS in December 2013. There have been no benzene IA exceedances since January 2014.

In 2012, 1,1-Dichloroethane, benzene, TCE, and vinyl chloride were detected in Building 14 SS soil vapor at concentrations greater than the ODH screening levels. Following the installation of the SSDS, SS exceedances were present in sample results collected from only one SS probe (SS-14-A). The 2015 SS concentrations at SS-14-A were less than the ODH SS screening levels (AF=33).

Conclusion

The 2015 sampling results show that IA concentrations are less than the 2012 ODH IA screening levels, and SS concentrations are less than the ODH SS screening levels (AF=33).

The vacuum at SS-14-E indicates that the existing SSDS is not successfully depressurizing the sub-slab in the southeast corner of Building 14.

Recommendation

As presented on Figure 1, U.S. EPA and GHD propose to install one additional extraction point (EP-3) in Building 14, in the vicinity of SS-14-E, in order to improve the vacuum in this portion of the building.

GHD will complete quarterly checks of the SSDS and collect SS and IA samples annually to ensure acceptable system operation conditions.

If you have questions related to the sampling or on-going site investigation, please do not hesitate to contact the undersigned.

GHD Services Inc.

Julian Hayward, P. Eng.

VC/cb/1

Encl.

cc: Steve Renninger - U.S. EPA Removal Program Manager
Leslie Patterson – U.S. EPA Remedial Program Manager
Jenny Davison – U.S. EPA Remedial Program Manager
Maddie Adams – Ohio EPA, Site Coordinator
Julian Hayward - GHD

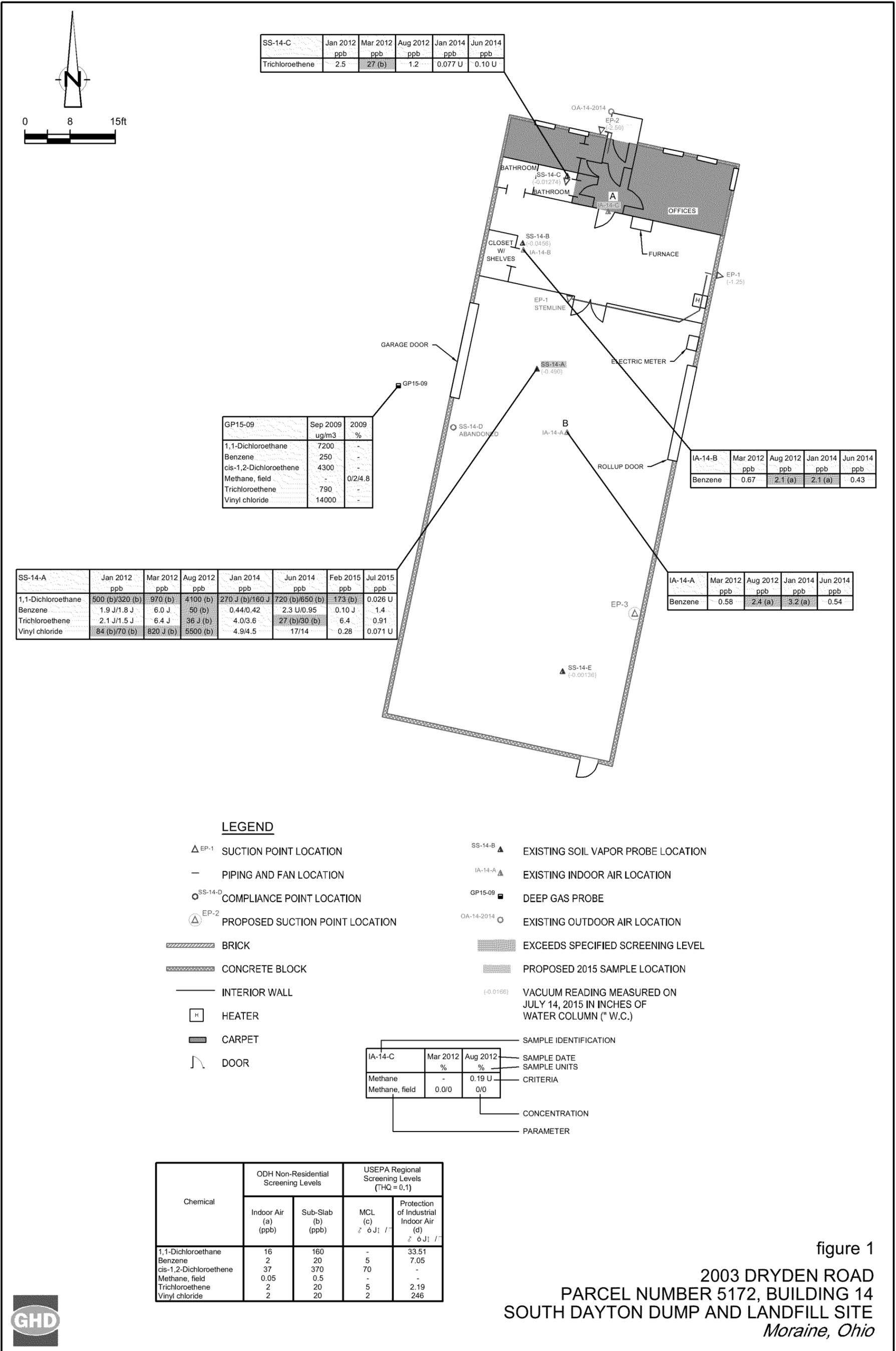


figure 1
 2003 DRYDEN ROAD
 PARCEL NUMBER 5172, BUILDING 14
 SOUTH DAYTON DUMP AND LANDFILL SITE
 Moraine, Ohio



Table 1
Summary Of Building 14 - NexGen Vending VI Analytical Results
South Dayton Dump And Landfill Site
Moraine, Ohio
2012-2015

Sample Location: Sample Date:	ODH Non-Residential Screening Levels		ODH Non-Residential Action Levels		IA-14-A	IA-14-A	IA-14-A	IA-14-A	IA-14-B	IA-14-B	IA-14-B	IA-14-B	IA-14-C
	Sub-Slab Soil Gas a	Indoor Air c	Sub-Slab Soil Gas b	Indoor Air d	3/27/2012	8/2/2012	1/16/2014	6/3/2014	3/27/2012	8/2/2012	1/16/2014	6/3/2014	3/27/2012
Volatiles Organic Compounds													
1,1-Dichloroethane	160	16	1600	160	0.026 U	0.046 J	0.026 U	0.026 U	0.035 J	0.055 J	0.026 U	0.026 U	0.026 U
Benzene	20	2	200	20	0.58	2.4 ^c	3.2 ^c	0.54	0.67	2.1 ^c	2.1 ^c	0.43	0.60
Chloroform (Trichloromethane)	800	80	8000	800	0.038 U	0.15 J	0.038 U	0.038 U	0.038 U	0.18 J	0.038 U	0.073 J	0.038 U
cis-1,2-Dichloroethene	370	37	3700	370	0.060 U	0.060 U	0.060 U	0.060 U	0.060 U	0.12 U	0.060 U	0.060 U	0.060 U
Ethylbenzene	2500	250	25000	2500	0.21	1.2	1.8	0.59	0.32	0.95	1.6	0.64	0.33
m&p-Xylenes	2000	200	20000	2000	0.58	4.4	6.2	2.2	1.3	3.6	5.4	2.3	1.3
Naphthalene	29	2.9	-	-	0.090 U	0.37 J	0.090 UJ	0.26 J	0.20 J	0.34 J	0.13 J	0.090 U	0.17 J
o-Xylene	2000	200	20000	2000	0.19 J	1.7	2.2	0.94	0.48	1.4	1.9	0.98	0.47
Tetrachloroethene	250	25	2500	250	0.040 U	0.054 J	0.28	0.040 U	0.040 U	0.080 U	0.058 U	0.047 U	0.040 U
Trichloroethene	20	2	200	20	0.047 J	0.043 J	0.036 U	0.036 U	0.080 J	0.072 U	0.036 U	0.036 U	0.036 J
Vinyl chloride	20	2	200	20	0.071 U	0.071 U	0.071 U	0.071 U	0.071 U	0.14 U	0.071 U	0.071 U	0.071 U

Notes:
 All units are in parts per billion by volume (ppbv)
 J - Estimated concentration.
 U - Not detected at the associated reporting limit.
 UJ - Not detected; associated reporting limit is estimated.
 - - Not applicable.

Table 1
 Summary Of Building 14 - NexGen Vending VI Analytical Results
 South Dayton Dump And Landfill Site
 Moraine, Ohio
 2012-2015

Sample Location: Sample Date: Parameters	ODH Non-Residential Screening Levels		ODH Non-Residential Action Levels		IA-14-C	IA-14-C	IA-14-C	IA-14-C	IA-14-C	IA-14-C	OA-14-2012	OA-14-2012	OA-14-2012
	Sub-Slab Soil Gas	Indoor Air	Sub-Slab Soil Gas	Indoor Air	8/2/2012	1/16/2014	6/3/2014	2/19/2015	7/16/2015	7/16/2015 Duplicate	1/6/2012	3/27/2012	8/2/2012
	a	c	b	d									
Volatile Organic Compounds													
1,1-Dichloroethane	160	16	1600	160	0.052 U	0.026 U	0.026 U	0.27 U	0.026 U	0.026 U	0.035 U	0.026 U	0.026 U
Benzene	20	2	200	20	2.0	1.8	0.43	1	1.5	1.7	0.24	0.15 J	0.22
Chloroform (Trichloromethane)	800	80	8000	800	0.15 J	0.038 J	0.070 J	0.14 U	0.13 J	0.14 J	0.049 J	0.038 U	0.038 U
cis-1,2-Dichloroethene	370	37	3700	370	0.12 U	0.060 U	0.060 U	0.69 U	0.060 U	0.060 U	0.014 U	0.060 U	0.060 U
Ethylbenzene	2500	250	25000	2500	0.81	0.88	0.81	0.27 U	1.4	1.5	0.058 J	0.068 U	0.075 J
m&p-Xylenes	2000	200	20000	2000	3.1	2.9	3.0	0.59	5.7	6.2	0.15 J	0.12 U	0.19 J
Naphthalene	29	2.9	-	-	0.18 U	0.090 U	0.26 J	0.69 U	0.26 J	0.32 J	0.086 U	0.090 U	0.090 UJ
o-Xylene	2000	200	20000	2000	1.2	1.0	1.3	0.27 U	1.9	2.1	0.051 J	0.061 U	0.062 J
Tetrachloroethene	250	25	2500	250	0.080 U	0.047 U	0.057 U	0.14 U	0.040 U	0.040 U	0.023 J	0.040 U	0.040 U
Trichloroethene	20	2	200	20	0.079 J	0.036 U	0.036 U	0.14 U	0.036 U	0.036 U	0.030 U	0.036 U	0.036 U
Vinyl chloride	20	2	200	20	0.14 U	0.071 U	0.071 U	0.14 U	0.071 U	0.071 U	0.029 U	0.071 U	0.071 U

Notes:

All units are in parts per billion by volume (ppbv)
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 - - Not applicable.

Table 1
Summary Of Building 14 - NexGen Vending VI Analytical Results
South Dayton Dump And Landfill Site
Moraine, Ohio
2012-2015

Sample Location: Sample Date: Parameters	ODH Non-Residential Screening Levels		ODH Non-Residential Action Levels		OA-14-2012	OA-14-2014	OA-14-2014	OA-14-2014	SS-14-A	SS-14-A	SS-14-A	SS-14-A	SS-14-A	
	Sub-Slab Soil Gas a	Indoor Air c	Sub-Slab Soil Gas b	Indoor Air d	1/16/2014	6/3/2014	2/19/2015	7/16/2015	1/6/2012	1/6/2012 Duplicate	3/28/2012	8/2/2012	1/16/2014	
Volatile Organic Compounds														
1,1-Dichloroethane	160	16	1600	160	0.026 U	0.026 U	0.026 UJ	0.026 U		500 ^a	320 ^a	970 ^a	4100 ^{ab}	270 J ^a
Benzene	20	2	200	20	0.17 J	0.073 J	0.23 J	0.46	1.9 J	1.8 J	6.0 J	50 ^a		0.44
Chloroform (Trichloromethane)	800	80	8000	800	0.038 U	0.038 U	0.038 UJ	0.038 U	0.62 U	0.74 U	1.3 U	7.7 U		5.4
cis-1,2-Dichloroethene	370	37	3700	370	0.060 U	0.060 U	0.060 UJ	0.060 U	2.6 J	1.5 J	6.9	110		3.2
Ethylbenzene	2500	250	25000	2500	0.068 U	0.068 U	0.068 UJ	0.080 J	0.44 U	0.52 U	2.4 U	14 U		0.14 J
m&p-Xylenes	2000	200	20000	2000	0.17 J	0.22	0.12 UJ	0.33	0.96 U	1.1 U	4.2 U	24 U		0.48
Naphthalene	29	2.9	-	-	0.090 U	0.090 U	0.090 UJ	0.090 U	1.7 U	2.0 U	3.1 U	18 UJ		0.18 U
o-Xylene	2000	200	20000	2000	0.061 U	0.065 J	0.061 UJ	0.10 J	0.44 U	0.52 U	2.2 J	12 U		0.20 J
Tetrachloroethene	250	25	2500	250	0.049 U	0.040 U	0.040 UJ	0.040 U	0.22 U	0.26 U	1.4 U	8.1 U		0.11 J
Trichloroethene	20	2	200	20	0.12 U	0.036 U	0.036 UJ	0.036 U	2.1 J	1.5 J	6.4 J	36 J ^a		4.0
Vinyl chloride	20	2	200	20	0.071 U	0.071 U	0.071 UJ	0.071 U	84 ^a	70 ^a	820 J ^{ab}	5500 ^{ab}		4.9

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Table 1
Summary Of Building 14 - NexGen Vending VI Analytical Results
South Dayton Dump And Landfill Site
Moraine, Ohio
2012-2015

Sample Location: Sample Date: Parameters	ODH Non-Residential Screening Levels		ODH Non-Residential Action Levels		SS-14-A 1/16/2014 Duplicate	SS-14-A 6/3/2014	SS-14-A 6/3/2014 Duplicate	SS-14-A 2/19/2015	SS-14-A 2/19/2015	SS-14-A 7/16/2015	SS-14-B 1/6/2012	SS-14-B 3/27/2012	SS-14-B 8/2/2012
	Sub-Slab Soil Gas	Indoor Air	Sub-Slab Soil Gas	Indoor Air									
	a	c	b	d									
Volatile Organic Compounds													
1,1-Dichloroethane	160	16	1600	160	160 J	720 ^a	650 ^a	173 ^a	85	0.026 U	54	77	130
Benzene	20	2	200	20	0.42	2.3 U	0.95	2.7 U	0.10 J	1.4	0.14 U	0.077 J	0.11 U
Chloroform (Trichloromethane)	800	80	8000	800	5.5	140	140	3	4.2	0.20	0.93 J	1.1	3.0
cis-1,2-Dichloroethene	370	37	3700	370	3.2	21	20	13.4 U	3.2	0.060 U	0.43 J	0.97	2.2
Ethylbenzene	2500	250	25000	2500	0.14 U	2.8 U	0.41 J	5.3 U	0.33	0.91	1.2 J	0.068 U	0.14 U
m&p-Xylenes	2000	200	20000	2000	0.24 U	5.0 U	1.7	10.7 U	0.71	3.5	7.1	0.20	0.32 J
Naphthalene	29	2.9	-	-	0.18 U	3.7 U	0.82 J	13.4 U	0.13 J	0.16 J	0.69 UJ	0.090 U	0.18 U
o-Xylene	2000	200	20000	2000	0.12 U	2.5 U	0.66	5.3 U	2.1	1.2	3.9	0.084 J	0.15 J
Tetrachloroethene	250	25	2500	250	3.8 J	1.7 U	0.87	2.7 U	0.22	0.084 J	0.088 U	0.41	1.0
Trichloroethene	20	2	200	20	3.6	27 ^a	30 ^a	4.6	6.4	0.91	3.5	4.7	16
Vinyl chloride	20	2	200	20	4.5	17	14	2.7 U	0.28	0.071 U	0.23 U	0.071 U	0.14 U

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 - - Not applicable.

Table 1
Summary Of Building 14 - NexGen Vending VI Analytical Results
South Dayton Dump And Landfill Site
Moraine, Ohio
2012-2015

Sample Location: Sample Date:	ODH Non-Residential Screening Levels		ODH Non-Residential Action Levels		SS-14-C	SS-14-C	SS-14-C	SS-14-C	SS-14-C
	Sub-Slab Soil Gas	Indoor Air	Sub-Slab Soil Gas	Indoor Air	1/6/2012	3/27/2012	8/2/2012	1/16/2014	6/3/2014
	a	c	b	d					
Parameters									
Volatile Organic Compounds									
1,1-Dichloroethane	160	16	1600	160	0.14 U	0.071 J	0.026 U	0.052 U	0.074 U
Benzene	20	2	200	20	0.072 U	0.056 U	0.056 U	1.3	0.57
Chloroform (Trichloromethane)	800	80	8000	800	0.12 U	0.043 J	0.097 J	0.076 U	0.11 U
cis-1,2-Dichloroethene	370	37	3700	370	0.056 U	0.060 U	0.060 U	0.12 U	0.17 U
Ethylbenzene	2500	250	25000	2500	0.088 U	0.068 U	0.068 U	0.38 J	0.71
m&p-Xylenes	2000	200	20000	2000	0.19 U	0.12 U	0.12 U	1.4	2.6
Naphthalene	29	2.9	-	-	0.34 U	0.090 U	0.090 UJ	0.43 J	0.27 J
o-Xylene	2000	200	20000	2000	0.088 U	0.061 U	0.061 U	0.69	1.1
Tetrachloroethene	250	25	2500	250	0.11 J	0.43	0.28	0.080 U	0.11 U
Trichloroethene	20	2	200	20	2.5	27*	1.2	0.077 U	0.10 U
Vinyl chloride	20	2	200	20	0.12 U	0.071 U	0.071 U	0.14 U	0.20 U

Notes:

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